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Stephan Schlitter

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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Arguments

The rejection of claims 1-13 and 15-19 based on Eller *et al.* (US 6,362,312) and Funk *et al.* (US 6,043,338) is maintained for reason of record and following response.

Eller *et al.* (US '312) discloses a process for preparing polytetrahydrofuran (1:5-12) comprising polymerizing tetrahydrofuran in the presence of at least one telogen and an acid-activated calcium motmorillonite {sheet silicate} catalyst (2:46-59), in a circulation reactor wherein the ratio of circulation {8 l/h} to feed {60 ml/h} is about 133:1 {as calculated by examiner} (4:56-58; 6:50-67) [See Official Action 7/9/08], but does not disclose a fluidized bed reactor.

Funk *et al.* (US '338) discloses a fluidized bed reactor, wherein catalyst can be added (7:56-67) or removed (10:17-28) to and from the reactor without disrupting the process or dismantling the reactor (Fig. 13); and that the feedstock is introduced to the reactor in an upward fashion (7:32-40 and Fig. 2). Funk *et al.* (US '338) also discloses the catalyst space velocity values fall between 0.2 and 20 per hr (5:39-43) and the superficial velocity of 1 to 12 m per hr (8:45-47). A person having skill in the art would recognize the advantages of a fluidized bed over a fixed bed, such as operational flexibility, and a steady supply of fresh catalyst to the process without disturbing fluidization and improved yields (2:40-44), as well as improved thermal control {excellent heat conductivity and require only moderate amounts of heat transfer area (removal or supplying of heat to maintain a catalysts temperature)}, and the feedstock does not have to be well mixed, as it is intimately and uniformly mixed within the fluidized bed.

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Funk *et al.* (US '338) was relied upon for fluidized bed reaction parameters. These parameters ultimately depend upon the flow rate {velocity} and density of the feedstock {fluid}, the specific gravity, size, porosity, and amount of particles, as well the bed height {The Ergun equation}. The solid catalysts particles are fluidized by the liquid/fluid fed from the lower part of the reactor and are expanded consequently. The rate of expansion of the solid particles depends upon the process parameters. A person having skill in the art would control the process parameters in order to achieve an expanded fluidized bed, wherein the fluidization is adequate to circulate and intimately mix the solid catalyst particles with the fluid, and to ensure that the flow rate does not exceed a certain limit as to destabilize the fluidized bed {slug flow} or cause the solid particles to flow out of the reactor with the product {PTHF} {terminal velocity}. The expansion factor $\{H/H_o\}$ is determined by the height of the fluidized bed (H) and the height of the stationary bed (H_o).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case Eller *et al.* (US '312) discloses a process for preparing polytetrahydrofuran, and Funk *et al.* (US '338) discloses a fluidized bed reactor. The advantages of fluidized bed reactors are known in the art, and it would have been obvious at the time of invention to combine a fluidized bed operating under conditions that satisfy proper

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fluidization conditions {no slugging or catalyst carried out of the reactor} in the process of preparing PTHF, because fluidized beds provide continuous operation {addition of catalyst without disruption of fluidization}, improved thermal control, and intimate and uniform mixing of catalyst and fluid.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The prior art King (US '106) provides evidence that fluidized bed reactors are utilized for the production of polyethers from cyclic ethers (2:60-63), via anion-bound metal oxide catalysts {ethoxylation of ethylene glycol to afford a polyethylene glycol (reaction of ethylene glycol and the cyclic ether ethylene oxide, example 15) (2:24-59; 9:1-15).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL PEPITONE whose telephone number is (571)270-3299. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Mark Eashoo, Ph.D./
Supervisory Patent Examiner, Art Unit 1796

MFP
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